

Response to

Polus Central American Wheelchair Project
By Jamie Noon and Cathy Savino

Polus Center for Social & Economic Development, Inc.
March 2009

1. Purpose

This report is written in response to Polus Center Central American Wheelchair Project, a report by Cathy Savino and Jamie Noon (Please see Attachment I). Mr. Noon and Ms. Savino visited Nicaragua and Honduras from August 17-23, 2008. The objective of their trip was to review the Central American Regional Wheelchair Outreach Program, a Polus Center project funded by USAID's War Victims Fund, and to follow up on other Polus Center activities that have received funding from USAID.

The Polus Center greatly appreciates feedback from external sources on all of its projects. Funders, volunteers and other interested parties are always invited to visit projects, and teams of volunteers, consultants and staff regularly travel to Nicaragua and Honduras to evaluate and report on projects. In this case the feedback from Ms. Savino and Mr. Noon has been considered extremely valuable, especially with regards to technical recommendations for the PLUSAA wheelchair workshop and for creating high quality wheelchairs.

There are, however, aspects of the report and various inferences made about programs that the Polus Center believes need clarification. The Polus Center is concerned that after ten years of successful service delivery in Nicaragua and Honduras that this report may have been misinterpreted. In February of 2009 the Polus Center received notification that it had not been awarded a USAID grant for continued wheelchair outreach in Central America. One of the reasons given was that the grant was "built upon a previous program with poor reported evaluation results." Given the number of grants the Polus Center receives from federal sources, such as USAID and the Department of State, and the potential impact this report could have on the Polus Center's reputation, a delegation visited Nicaragua and Honduras in February 2009 to evaluate the programs against this report in order to prepare a response. The delegation consisted

of Polus Center employees, board members, and volunteers. The purpose of this report is to present our findings and to compare those observations to some outlined in the earlier report.

2. Background

The Polus Center for Social & Economic Development, Inc. supports community-based programs that promote social and economic opportunities for people with disabilities and other vulnerable groups in the United States and throughout the developing world. In 1997, the Polus Center began its international work by coordinating humanitarian efforts in Central America aimed at addressing the long-term needs of people with disabilities, particularly those individuals who lost limbs due to acts of war, landmines and diseases.

In August 1999, the Polus Center opened the Walking Unidos Prosthetic Outreach program in León, Nicaragua. The success of Walking Unidos inspired additional human service programs in Nicaragua to address social and economic reintegration for the disabled. Subsequently, in 2001 a second prosthetic clinic was opened in Choluteca, Honduras. The Vida Nueva Prosthetic Outreach program provides services to people with disabilities throughout Honduras and receives referrals from all regions of the country.

The Disability Leadership Center was also opened with funding from USAID's War Victims' Fund and promotes research, education and public policy solution for people with disabilities. The Polus Center's work in Nicaragua is coordinated by the Foundation of Walking Unidos (FURWUS). FURWUS is the umbrella organization for all projects mentioned above, as well as several other economic activities and programs. Santiago Castellón is the Executive Director for FURWUS and oversees all projects.

The PLUSAA Wheelchair workshop was opened in July of 2004 with funding from the Leahy War Victims' Fund. The Polus Center brings consultants and experts in wheelchair provision to the workshop regularly and is constantly trying to improve the quality of the wheelchairs and the technical skills of its workers, while streamlining the workshop to keep costs low. Currently wheelchairs cost about US\$220 and PLUSAA will undergo ISO/RESNA certification within the next year. The purpose of the subsequent grant was to build on that initial investment, by creating a distribution system throughout Central America for providing and underwriting wheelchairs. In a public-private partnership with Invacare Corporation, the project will also streamline operations to make PLUSAA as efficient and cost-effective as possible. PLUSAA is poised to be a leading provider of appropriate wheelchairs throughout Central America.

3. Response

Polus Central American Wheelchair Project Report Findings, August 2008
Response and Delegation Findings, February 2009
"Lack of Skill"
Managerial and Technical Skills

“However, the execution of programs, while perhaps solid at first, has diminished over time. Now, when it is time for others to assume some of the responsibility and ownership of the programs, there is little sense that they will do so. This leaves the different programs now lacking in managerial and technical skills.”

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Managerial Skills:

- Program Directors for PLUSSA have a great deal of experience and skill. Santiago Castellón has been the Executive Director of FURWUS for five years and was the Program Director of Walking Unidos for five years before that. Reina Estrada has been the Program Director of Vida Nueva for six years. Marvin Moreira has been the Program Director of Walking Unidos for four years. No program director has been at his or her position for less than two years.
- The Polus Center has been able to grow and develop throughout the world, without closing any doors in Nicaragua or Honduras, largely due to the innovative work and commitment of its Program Directors.
- Programs have continued to be successful, many after USAID funding ended (as in the case of Walking Unidos, Vida Nueva, the Ben Linder Café, and the Leadership Center).
- FURWUS staff undergoes rigorous training to understand the principles of Community Based Rehabilitation (CBR) and person centered planning in order to ensure that the mission and principles of the Polus Center and FURWUS are reflected in their work.
- Trainings for program directors have included; Social Role Valorization with Darcy Elks, Challenges and Leadership with Michael Kendrick, Supported Employment and Valued Social Roles with Michael Lundquist, Person Centered Planning with Jan Doody and Profiling and Information Dissemination and Administration with Santiago Castellón, among others.

Technical Skills

- All technicians at Walking Unidos and Vida Nueva have received Center for International Rehabilitation (CIR) training.
- In the last ten years, the Polus Center has enrolled five technicians in Don Bosco University's (DBU) distance learning program, three of whom continue to work at the clinics.
- The Polus Center believes that training should be on-going, and consultants regularly visit clinics and workshops to work with staff in all areas of operation. Regular consultants include, Dave Evans, BOC (certified prosthetist), Veterans for America Central America, Ralf Hotchkiss, Whirlwind Wheelchairs, and Rachel Thibeault, PhD, University of Ottawa, among others. In fact, the Polus Center has found this to be a practical approach for training, as we are always cognizant that once a person has professional credentials he/she will be more inclined to look for work in other countries, as the Nicaraguan economy simply cannot sustain him/her.
- Volunteer and Vice President of Invacare Corporation (<http://www.invacare.com>), Mark Sullivan, was so impressed with the quality of PLUSAA wheelchairs he has offered to have Invacare pay to get PLUSAA RESNA certified.
- While a loss of trained staff is a recognized problem, economic constraints and realities of the Nicaraguan economy (the poorest in the Western Hemisphere) make it hard to retain people when there are opportunities for higher wages elsewhere. As the volume and profitability of PLUSAA is increased there will be more incentive for people to stay.

Leadership Skills

“While each part of the Polus network of projects has its own manager, none of these individuals possesses the strength approaching that of Mr. Castellon.”

pp 4 • While the Polus Center agrees that much of its strength in Central America “lies in Santiago Castellón with his vision, drive, and personal involvement (Savino:Noon pp 4),” it is important to remember that Mr. Castellón first began working with the Polus Center as a part-time translator over ten years ago, and his leadership skills and talents have been developed over time.

- Mr. Castellón has been careful to develop the leadership skills and talents of his staff. He has a plan in place to work closely with two of his employees so he can begin to phase out of the day to day operations of the Nicaragua programs and focus more on the Polus Center's Latin America programs overall.

Skill with Regards to Postural Support Needs

“The principles of individualized wheelchair service are understood and promoted but the clinical skills, particularly for users with postural support needs are not being met.”

pp 4 • The Polus Center feels that this statement is not accurate across the board. While there may be individual cases where the beneficiary's postural support needs were not being met, in the majority of cases beneficiaries are being seated and fitted properly according to their postural support needs. This is an important priority for PLUSAA.

- The Polus Center, FURWUS, and PLUSAA understand the importance of proper seating and postural support, and a significant portion of the next phase is for more training for PLUSAA technicians with regards to these issues.
- PLUSAA values training for its employees, and consultants regularly visit the workshop to assist with training and education. In 2008 Enrique Calderron, lead technician for seating and outreach, was sent to the Projimo Training Center in Mexico, to learn more about the intricacies of seating, especially with regards to children with Cerebral Palsy.

Lack of Community Involvement

“Many things could account for the change of circumstances, but largely, the impression is that the community, including local government and the university, has taken less responsibility over time rather than more.”

pp 3,4 • The Polus Center agrees that community and governmental interest has certainly vacillated over time but does not feel any Polus Center project lacks community involvement or participation. Local support varies in degree depending on public sentiment and political and economic conditions. Over the years the Polus Center and FURWUS have continuously worked toward greater community involvement and local ownership.

- For example, in February 2009, Mr. Castellon, Mr. Lundquist and several members of the visiting delegation were invited by Manuel Calderon, Mayor of León, to discuss Universal Design and making the Municipal Building and Central Square of León accessible for people with disabilities.
- The interest in continuing to make León accessible and the initiative taken by the mayor’s office in contacting the Polus Center and FURWUS as key partners demonstrates the strength of the commitment of the community of León. This commitment extends not only to FURWUS projects, but to integrating people with disabilities into the community. Members of the Polus delegation were also invited to the FURWUS board meeting to review the architectural drawings depicting ramps and curb cuts for the Central Square and the Mayor’s office. The construction for improved access is scheduled to begin April 2009.
- The Polus Center and FURWUS projects also receive financial support from the community, such as the local police force which purchases one wheelchair per month for people with mobility impairments. Municipal government and school systems have paid for teachers to attend workshops on integrating children with disabilities in the classrooms.
- Local organizations make referrals to FURWUS projects and help find funding. For example the local organization Alianza Americana has a waiting list of people who need wheelchairs and is working with an American University to do the necessary fundraising.
- FURWUS also works very closely with local organizations such as the Organization for Injured War Veteran (ORD) and Los Pipitos (children with cerebral palsy). FURWUS has agreements with and letters of support from the Nicaraguan Ministry of Health and Nicaraguan Parliament (see Attachment II).

Lack of Referral Sources

“Referral Sources appear to be limited. Referral out to disabled peoples organizations (DPO’s) or promotion of support groups was not well illustrated.”

pp. 4 • Currently local hospitals, rehabilitation centers, local DPOs and NGOs (for example the Organization for Injured War Veterans (ORD), Los Pipitos and Adafin), and municipal branches (such as the mayor’s office), make referrals to FURWUS programs and vice versa. These projects have also gained international recognition and staff in the United States often field phone calls and refer people or organizations to FURWUS projects.

- We do, however, recognize that perhaps these alliances were not as clearly illustrated in the proposal as they could have been and we will highlight this network more prominently in the future. Again, a large portion of the next phase is to develop distribution networks throughout Central America using existing and new collaborative relationships with DPOs and other support groups.

Microfinance

“Microfinance is a difficult area and while Polus has made many and varied inroads into this area in the end it is hard to tell what ventures are successful and how that is defined.”

pp. 12 • The Polus Center recognizes a lack of framework with regards to micro-loans. The Polus Center and FURWUS will continue to provide micro-grants to individuals who face abject poverty for income generation but will discontinue the use of micro-loans

Sustainability

“ “It is unclear how these workshops can be sustained.”

pp. 9

- Prosthetic workshops around the world struggle with the issue of sustainability. The difficulties of opening a P&O workshop in a developing country are vast, particularly because the normal market forces do not apply. The workshop’s products are unaffordable to the people who need them and most P&O programs will always have to rely on international donors. Executive Director of the Polus Center, Michael Lundquist, addressed these challenges saying that implementing prosthetic rehabilitation programs are “enormously challenging because of the high cost, specialized training, and questions of appropriate technology and sustainability, [yet] the development of CBR victim assistance programs is essential. The lack or frequent failure of CBR programs and the inability to meet the needs of the disabled in developing countries, illustrates the difficulty of creating and sustaining rehabilitation projects.”

- The Polus Center has been cognizant of the multitude of challenges involved with opening a prosthetic and orthotic outreach clinic in the poorest country in Central America. Each prosthetic workshop has been operating successfully for many years (Walking Unidos; 10 years and Vida Nueva; 6 years). Walking Unidos and Vida Nueva receive much of their funding from private funders and community foundations and have received little U.S. government funding, yet neither of them have shut their doors. In the last year, wheelchairs, prosthetics and orthotics have been purchased by the International Foundation, the Julia Burke Foundation, the Ananda Foundation, Grapes for Humanity and the Coffeelands Trust, which has received funding from Green Mountain Coffee Roasters and Starbucks.

- FURWUS strives to ensure sustainability by working with a small staff and keeping overhead costs as low as possible. FURWUS programs also work with a diverse pool of

international and local funders in order to help achieve sustainability and avoid being overly reliant on any one source. At PLUSAA, as the manufacturing facility is streamlined, the distribution network is grown, and more wheelchairs are produced and sold, the cost will decrease. With the increased distribution system and production improvements, PLUSAA will become self-sustaining within the first year.

Moving Forward

The main purpose in preparing this report is to clarify aspects of the Polus Center's programs for future funders and supporters.

The Polus Center is committed to continuously evaluating and improving its services and both encourages and welcomes feedback. Many of the suggestions and recommendations laid out by Mr. Noon and Mrs. Savino have already been or are being implemented.

With regards to the PLUSAA wheelchair workshop, the Polus Center feels it is necessary to take PLUSAA to the next level. This includes establishing a distribution system to circulate PLUSAA wheelchairs throughout Central America. Donated "charity chairs" remain PLUSAA's main competitor. These chairs are ill suited to the terrain of Central America, hard to repair, undermine local wheelchair services and, most importantly, can be ill fitting and cause life threatening sores, ulcers and other conditions. By contrast, PLUSAA wheelchairs are custom fitted, easily repaired and create much needed employment in local communities, especially for people with disabilities. By building on the initial investment made by the Leahy Way Victims' Fund, PLUSAA can effectively and sustainably distribute wheelchairs to people with disabilities in Nicaragua, Honduras, El Salvador and Guatemala.

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Polus Central American Wheelchair
Project
Nicaragua and Honduras
August, 2008

By Jamie Noon and Cathy Savino

1. Introduction

Mr. Jamie Noon (Noon Design), a wheelchair seating expert, and Catherine Savino of USAID's Leahy War Victims Fund visited Nicaragua and Honduras (Leon and Choluteca) from Aug 17-23, 2008. The objective of the trip was to review the Central American Regional Wheelchair Outreach program of the Polus Center for Social and Economic Development (Polus). The wheelchair program, funded under USAID's War Victims Fund, began in July 2004 and ended in June 2008. An additional objective of the visit was to follow-up on other activities supported by the War Victims Fund through POLUS, namely prosthetics and orthotics workshops, income-generation activities, and the Disability Leadership Institute. Lastly, the team planned to visit ICRC in Managua to learn about the country's rehabilitation sector.

Past visits to POLUS in Central America took place in March 2001 (Consultant: Jay Nash), and in September 2002 (Fund Manager: Lloyd Feinberg). Those trip reports, quarterly reports, and other POLUS documentation were used as background material for this visit. As a philosophy, POLUS believes that the full integration of people with disabilities depends on comprehensively addressing both social and economic needs. In practice, this means that every POLUS program builds on the next one. Because of this intrinsic link between all programs, looking at the wheelchair program also meant understanding the other facets of POLUS support. However, the team concentrated its efforts primarily on the wheelchair program.

Polus's work in Nicaragua is coordinated by its national branch, FURWUS (Fundacion Para Rehabilitacion Walkin Unidos). Mr. Santiago Castellon, founder and president of FURWUS in Leon, Nicaragua, graciously facilitated the visits along with Ms. Silvia Illescas. The full name of the wheelchair program in Nicaragua is PLUSAA (Program Leones de Usanos de Sillas de Ruedas y aparattive auxiliaries). The trip included visits to; the FURWUS office in Leon; the PLUSAA wheelchair production facility, and the showroom in Leon, Ben Linder Café, the Disability Leadership Center in Leon; three Individuals (micro grant recipients) in Leon; the Walking Unidos office, P&O clinic, and workshop in Leon; one sewing workshop / demonstration project (micro grant recipients) near Leon; one nursery (micro grant recipients) outside Leon; one start up chicken farm (micro grant recipient) outside Leon City; one fishing coop (micro grant recipient) in PoneLOYA, Nicaragua; Vida Nueva (P&O clinic and workshop / wheelchair workshop) in Choluteca, Honduras; Carmen, grade school student, (micro grant / education assistance recipient), ICRC, and the CAPADIFE prosthetic program in Managua.

2. Background

The Polus Center for Social and Economic Development Inc. began working in Nicaragua in 1997 to address the long-term needs of people with disabilities, especially those injured by land mines and disease. The Polus Center, of Worcester Massachusetts, has a background in inclusive grassroots development, participatory leadership, and over twenty years of domestic experience working with people with disabilities. The organization first came to USAID after establishing a presence in Leon, Nicaragua.

Polus's first project, Walking Unidos, the prosthetic outreach program in Leon, was created through a collaborative effort by the Polus Center, the Nicaraguan community, and North American volunteers. The workshop opened in August 1999.

Polus's second project, the Ben Linder Cyber Café, encompasses several economic strengthening activities. In addition to the café, there is internet business next door. Co-located in the café is the coffee roaster, (a business of roasting beans and selling the product) and a massage service.

Access Project – “A City for Everyone” was Polus's third activity in Leon. With the goal of integrating people with disabilities into their communities, this effort, funded through Pan-American Health Organization by the War Victims Fund, brought physical accessibility to Leon.

The program worked with the University of Leon, the mayor's office, local partners, and various consultants, including people with disabilities, to create a model space with curb cuts, ramps, and lifts along with community education and awareness.

Lastly, POLUS was awarded a cooperative agreement for the Central American Regional Wheelchair Outreach on July 7, 2004. Its main goals were to

- increase the mobility of persons with disabilities,
- increase economic opportunities and social inclusion, and
- mobilize grassroots community organization.

3. Funding

POLUS first received funding from the War Victim Funds as a sub-grantee under a grant to PAHO in July 2002. Funding of approximately \$128,240 supported both Walking Unidos and the Ben Linder Café plus two physical therapy scholarships. The project received additional funding of \$478,000 in July 2003 and another two scholarships. Lastly, POLUS was awarded a cooperative agreement for the Central American Regional Wheelchair Outreach on July 7, 2004. The grant for \$1,068,158 ended on June 30, 2008.

4. Findings

The general impression from the visit was that conceptual basis for programming was sound. Polus has done a tremendous job garnering attention and resources for people with disabilities in Leon. They capitalized on opportunities, they built upon every success and they are persuasive advocates with a dedicated team of practitioners. However, the execution of the programs, while perhaps solid at first, has diminished over time. Now, when it is time for others to assume some of the responsibility and ownership of the programs, there is little sense that they will do so. This leaves the different programs now lacking in managerial and technical skills.

Many things could account for the change of circumstances, but largely, the impression is that the community, including local government and the university, has taken less responsibility over time rather than more. This lack of ownership from the community has left POLUS responsible for many different sectors with no clear way to sustain its operations.

The following Strengths Weaknesses Opportunities Threats Analysis (SWOT) analysis consolidates findings from the trip. The programs reviewed were conducted between 2005 and June 2006.

Strengths

- POLUS's strength locally lies in Santiago Castellon with his vision, drive, and personal involvement in many aspects of these projects.
- Mr. Castellon's close connection with all aspects of the projects, particularly spending, contributes to an organization which appears to be lean and free from financial mismanagement.

- Mr. Castellon has developed powerful contacts within the country.
- The project shows a commitment to the principles of individual wheelchair assessment and provision based on the needs of the individual.
- There is a varied base of sponsorship for wheelchairs (ICRC, the mayor's office, private clinics, Rotary International and the government)

Weakness

- While each part of the POLUS network of projects has its own manager, none of these individuals possesses the strength approaching that of Mr. Castellon.
- Referral sources appear to be limited. Referral out to disabled peoples organizations (DPO's) or promotion of support groups was not well illustrated.
- The principles of individualized wheelchair service are understood and promoted, but clinical skills, particularly for users with postural support needs are not being provided appropriately.

Opportunities

- Build confidence among and skills of project managers.
- Broadening of the referral base to improve sustainability. Ideas presented by Mr. Castellon include the use of radio ads to reach disconnected users in rural communities or those who are housebound.
- Strengthen collaboration with disabled people's organization (DPO) including peer group training, accurate referrals, and support groups.
- Improve strategies to influence policy development regarding the appropriate provision of wheelchairs in Nicaragua and Central America. Santiago was a participant in the Bangalore consensus conference, which played a large part in the development of the guidelines. Armed with the newly released International Wheelchair Guidelines from WHO, and with Polus's political connections, there is a chance of to bring about some change in this area.
- Pursue a professional-level clinical skill development. A physical therapist with quality specialty training can lead the clinical aspects of wheelchair distribution and spread these clinical skills throughout the country and region. This spread of clinical skills has been proven to create a market "pull" of appropriate wheelchairs and services rather than simply "pushing" products from a strictly production / distribution model. With the imminent collapse of FUMI, formerly leading wheelchair producer in Nicaragua, PLUSAA is in a position to re-define the wheelchair provision landscape in the region. These can be done by discarding the "product first" mentality that drives most wheelchair programs in developing countries, and truly embodying the intent of the WHO Wheelchair Guidelines.
- Another possible avenue for providing a higher level of clinical skills in wheelchair provision is to provide advanced wheelchair training to practicing prosthetist / orthotists. ICRC did this in recent years for over sixty of their expatriate staff (including Carlos Delgado). The high clinical discipline of this field is much more closely suited to the individual needs of wheelchair users than to that of wheelchair builders working alone. The idea was discussed for Carlos to transfer some knowledge, skills, and materials to PLUSAA staff.
- Staff of FUMI in Managua were trained to produce pressure relief cushions in 2002. The group may still have a cushion cutting jig that could be duplicated. The skill to assess and adapt wheelchair seating to get rid of unsafe pressures to accommodate a person without sensation

could be developed as well. Without these basic products and skills, users without sensation will be at risk of serious injury or death from pressure sores.

- Diversifying the products available, such as the folding walker, can help to create a steady cash flow that will see the organization through times when sales are down such as recently when donated wheelchairs flooded the market

Threats

- POLUS would likely suffer greatly without Mr. Castellon's direct and detailed management. The greatest threat to PLUSAA sustainability and that of all wheelchair producers in Nicaragua remains the large-scale donations of new and refurbished wheelchairs by foreign organizations (i.e. Wheels for Humanity, Wheelchair Foundation, and Free Wheelchair Mission) through local and international organizations (i.e. Rotary Club, Lions Club, and the wife of the president). Donated wheelchairs periodically flood the market in large numbers. Repeated shortfalls can easily make it financially impossible to continue. Those who survive do so with a lifeline of funding from foreign donors. This dependency can unravel the drive and business sense of an organization.
- Loss of trained staff is a problem. Investments have been made in key staff (Duilio was trained at Don Bosco for three years) who did not stay with the programs after the required time, in this case three years. As there are few places to practice wheelchair provision skills, the project may be more likely to retain staff who receive further training and recognition in this specialty area.

5. Polus Wheelchair Program

In establishing its connections in Leon, and as part of its plan to work locally, Polus helped create FURWUS, the NGO that conducting all programs. FURWUS activities include coordination of PLUSAA; the Disability Leadership Center; Walking Unidos; Vida Nueva; CAPADIFE; micro finance programs; and provision of financial support to the Ben Linder Café. Mr. Santiago Castellon and Mr. Michael Lundquist are the main force, and vision behind each organization.

Facts and figures

The distribution of funds to the different areas through this project is roughly as follows:

- 60 percent - Wheelchairs
- 30 percent - Micro finance (grants and loans)
- 10 percent - Education and awareness

Within the wheelchair program, 296 wheelchairs have been produced and provided to equal numbers of males and females between 2006 and June 2008. Approximately three-quarters of the recipients have been adults.

- 80 wheelchairs in 2006
- 126 wheelchairs in 2007
- 90 wheelchairs up to June 2008

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The proportion of types of wheelchairs issued in 2007 was roughly:

- 74 percent Hospitalaria (hybrid)
- 12 percent Special Hospitalaria for kids
- 2 percent Tricycle
- 12 percent Torbellino

The various diagnoses of wheelchair users is as follows:

- 46 cerebral palsy
- 65 diabetes
- 51 arthritis
- 46 meningitis
- 1 spina bifida
- 41 polio
- 21 accidents

Thus far in 2008, there has been a shift in the type of wheelchair produced: nearly half of the chairs now produced are the new “Torbellino PLUSAA (see product descriptions below). The benefits of the new model are clear. The high number of Hospitalaria wheelchairs is slightly concerning. This model’s high backrest will limit the function of many users. Considering the high number—approx. twenty [20]—of this model pre-produced and in the show room, it is likely that the recipients needs regarding backrest height will not be fully or appropriately considered.

Hubs and lathes

Mr. Ralf Hochkiss from Whirlwind Wheelchairs Inc. was conducting training in the workshop during the team’s visit. The production team was working on a new design for a rear wheel hub. The new design includes purchased bicycle wheel hubs and requires a fraction of the time to produce (less than thirty minutes versus two hrs). Currently, lathe work for hubs and for rear axle bushings is contracted to LaSalle Technical School next door. Ralf stated that the hub and bushing could be produced without the use of a lathe. The workshop staff and management contend that a lathe is required to make these parts accurately. After their visit, the team consulted experienced wheelchair builders—Stefan Constantinescu, Chris Rushman, Matt McCambridge and Simon Gue—who indicated that small wheelchair workshops clearly benefit from the presence of a lathe because its use enables current wheelchair parts to be more accurate, and it provides the workshop with the potential to increase its future product development, and provides opportunities for income generation during times when wheelchair orders are light. One hitch may be that special training is generally advisable to make the best use of a lathe. A person with this training may be harder to retain than an average wheelchair workshop technician

Location

PLUSAA is currently renting space from LaSalle Technical School. At the project’s inception, the rent was US\$300; it is now US\$500 usd per month. Special machining (lathe work) is provided by LaSalle’s metal workshop, but the per piece cost is increasing. For many customers,

travel to and from the workshop / showroom is quite costly (40 Cordova's for one-way travel by taxi, plus time charged by the taxi to wait, equals 100 to 120 Cordova or \$6.00). The management feels that moving to a location more central in Leon would make services more accessible for users and increase business. The benefit of a move would be greatest if there were additional efforts to widen and strengthen the referral base and DPO connections in Leon.

Wheelchair service

PLUSAA have shown good judgment in sending Enrique, the workshop technician / wheelchair assessment practitioner, to Mexico for a two and one-half month course in wheelchair provision. The course was conducted by therapists from Canada, Mexico, and Holland. The training was described as having a high focus on practical experience. The training was, no doubt, very good and imparted a great deal of information and experience in seating. There are few courses available in any country to learn the skills needed to appropriately assess the need for and provide appropriate wheelchairs and supportive seating. Unfortunately, for most courses, there is no standard curriculum or minimum learning required. Many courses do not include testing, and attendance is the only requirement for receiving a certificate of completion. As a result, attendee performance is mixed. In this case, the talent and creativity of the practitioner is a major factor in the quality of the service. Enrique is gifted and motivated and has shown an interest in providing a service beyond the confines of standard products. Enrique also serves as peer trainer, offering advice and demonstration on wheelchair skills to new users. With time, this peer training can be supported and developed into a complete, consistent, and repeatable module.

In 2002 and 2003, a joint project between Whirlwind Wheelchairs International and Solidez (Managua) provided an advanced course in seating and mobility providing basic proficiency training to 8 Physical Therapists in Nicaragua. The training was pass / fail and included testing of knowledge and proficiencies. It may be possible to contact these trained therapists and draw on them as a local clinical resource for case by case support or for possible training. Ideally the formerly trained therapists should receive refresher training and training of trainers (TOT) before passing on the skills.

Wheelchair Referrals

Referral sources include Walking Unidos, Disability Leadership Institute; doctors at local hospitals (one in particular at a private clinic); word of mouth, and social networks. A new effort was described whereby the government would include a new category for physiatrists in its systems. The hope is that the presence of such professionals in government systems may provide a good source of referrals and lead to the promotion of appropriate wheelchair provision. Direct involvement with these new professionals would be an important part of a plan to widen the referral base. There does not appear to be many referrals coming from local DPOs.

Wheelchair Payment

Funds to pay for wheelchairs come from; ICRC (one to two per month); private clinics (two to three per month); the mayor of Leon's office; Adifin; World Vision (a few cases); Rotary Club; and ISDU (police social security).

PLUSAA Products

PLUSAA produces several models of wheelchair, a folding three-wheel walker, and custom tricycles.

Product and description Impressions and comments

Torbellino

An older version wheelchair, taught by Whirlwind Wheelchairs Inc.(WWI)

This model has a shorter wheelbase and a deep bucket or rearward tilt of seat and back (12 degrees).

Torbellino PLUSAA

This is the latest model of wheelchair taught by WWI. This new model is often referred to by WWI as the “Rough Rider”. This model has a longer wheelbase than most wheelchairs, including the older model from WWI, making forward tipping less common. It also has a 12-degree bucket and is well suited to very rough terrain. It can easily roll forward down curbs and short runs of steps (two to three) without requiring that the rider to perform a rear-wheel balance or “wheelie.”

Some users, such as children and adults with cerebral palsy, may find that the deep bucket makes transfers and upright sitting for functional activities slightly more difficult. Adaptations to the frame to accommodate appropriate seating components have been successfully used for these groups using this frame (see HI Philippines).

Hospitalaria

Described as a “hybrid,” combining a hospital wheelchair and a Torbellino (RR), designed with support from Ralf Hochkiss.

The resulting product is actually much more like the Torbellino (RR) than a hospital wheelchair. The only difference from the Torbellino is that the Hospitalaria includes a high backrest and removable, padded armrests. Both are good options considering the user mix reported (only 6 percent spinal cord injury). While “individual assessment and fitting” is described as a key part of this service, it is not clear whether the features are prescribed appropriately.

Ralf Hochkiss voiced his concern that the receptacle for the armrest is too sharp and presents a risk of injury to the user during transfers, when the armrest is removed. He suggested that a ring made of rod be welded to the top edge of the receptacle tube to make the end less sharp. This suggestion has not yet been implemented. This is a simple solution which, while adding another step to production, would prevent life threatening injury to the user.

\\Recliner

Old style WWI Torbellino with adjustable recline.

The recline mechanism on the demonstration wheelchair was extremely difficult to use, even by the workshop staff. This could be improved. This feature adds considerable weight and size to the wheelchair, making it much more difficult to transport. For this reason, it's use should be carefully considered by the person assessing the individual's needs. This feature was described as for appropriate for people who would be dressing and changing while in the wheelchair. In the case of aging wheelchair riders, this is also a very helpful feature to accommodate a fixed kyphosis or forward rounded spine.

An adjustable tension back (TAB) upholstery is a good option which can serve many users with kyphosis, rib humps, and an inability to sit upright (hip contractures) without the extra weight, bulk, and tricky mechanism of a reclining frame.

Hospitalaria Especial / Custom adaptations

The project promotes the idea of individualized service. This is to be commended. The workshop staff are providing such a service in earnest. The strength of the workshop staff (Enrique) may lie more in their very creative technical ability than in the clinical aspects of their service.

The use of inappropriate strapping to provide postural support was clearly standard practice. An understanding of the most basic principles of postural support was not demonstrated in products present, in photos, or in descriptions.

Wheel hubs and axle bushing With input from Ralf H., the latest wheel hub design uses standard bicycle wheel hub parts and takes less than thirty minutes to make versus the former designs, which require two hours each. Ralf insists that the hub and rear axle bushing can be made well

without the use of a lathe, but the workshop staff and management are certain that a lathe is needed for these and other operations.

Cushions /

Skin protection cushions Many of the users provided wheelchairs do not require a pressure relief cushion. Many users will be at high risk of pressure sores and possibly death. Cushions shown on all showroom chairs consisted of a three-inch sheet of foam with a canvas cover pulled tight and fixed to a thin plywood base. For a rider with sensation, the convex shape would be unstable to sit on. It may provide some comfort, but may raise many users such that the ergonomics for independent propulsion is compromised.

There were no examples of a pressure relief cushion for riders without sensation. Enrique explained that when someone has limited sensation, a special cushion is made for them. A firmer foam is generally required to make an effective pressure relief cushion. No firm foam or patterns for special shapes were available in the workshop. It is unlikely that any adequate pressure relief cushions have been provided or that this workshop has the skills to make and fit one.

Tricycle

A custom made, hand-driven tricycle is made to order. Enrique's personal model is sporty, and resembles a wheelchair with a hand crank attachment. However, it was explained that the frame is entirely purpose built; it is not a standard wheelchair frame with trike attachment. A common problem with trikes is that if the center of gravity is too far back and not enough weight is shared by the front, drive wheel, traction is lost on small inclines.

Folding three wheel walker

The overall design of this walker is clever, but it was poorly executed. The model displayed may have been an early prototype that will be improved through better workmanship and an improved folding mechanism.

6. Other Complimentary Programs

Walking Unidos P&O

Lead by Marvin, Walking Unidos provides four prosthetics and twenty orthosis (mainly shoe inserts for diabetes) per month. Sida is the most qualified, having just completed the first module of Cat II training at the University of Don Bosco in El Salvador. There are also two technicians and one assistant, who have attended CIR training. Prosthetics are made with ICRC polypropylene components. There is a waiting list of approximately twenty users per year; 50 percent of the ICRC components will be funded for another year; and US\$108,000.00 worth of materials per year are distributed between the three locations: Walking Unidos, Villa Nueva, and CAPADIFE. The operating costs for the facility are US\$3,500.00 per month.

Production figures from Lloyd Feinberg's 2002 report indicated that 205 new prostheses were produced from August 1999 to Sept 2002, about six prostheses per month. Current production runs to about four new prostheses per month. It is not clear whether there is any value placed on professional training, given how few people have recognized credentials. It is unclear how these workshops can be sustained.

Vida Nueva P&O and Wheelchair Repair

Aside from Vida Nueva, the nearest prosthetic center in the country is five hours away in the capital of San Felipe. Along with full service prosthetic and orthotic services, Vida Nueva in Chuloteca, Honduras has a newly equipped wheelchair repair workshop, that was equipped through set-up funds from USAID. Although it had not yet been used, the repair facility seems adequate for repairs and basic modifications. It could provide wheelchair repair services, as well as conducting assessments and the ordering of new wheelchairs. The wheelchair technician will receive apprentice-style training at PLUSAA. More detailed clinical wheelchair skills training should be considered. The role of the wheelchair clinician (for assessment and fitting) in this setting may be best filled by a qualified prosthetist / orthotist. The workshop needs to have a stock of spare parts, particularly if the workshop plans to repair donated chairs, since there are many models of donated chairs and parts may be very difficult to obtain. The workshop uses ICRC polypropylene components in its prosthetic services.

CAPADIFE

Based in Managua next to the ICRC workshop and offices, CAPADIFE provides wheelchairs, prosthetics, and orthotics. CAPADIFE's facilities have been kept very modest in contrast to ICRC's (US\$400 to ICRC's \$1,600 USD per month rent). The goal is for CAPADIFE to be financially independent within one year. A continued partnership with ICRC can help to keep FURWUS involved in movements toward more government participation in policy development. The Ortega Administration and disability organizations—ICRC, ENCONARI, National Rehab Council, and MINSAs—will meet before the end of the year to establish a plan of action. This could include some agreement regarding the WHO Wheelchair Guidelines and provision of wheelchairs in Nicaragua.

Disability Leadership Center (DLC)

The Disability Leadership Institute promotes a groundbreaking concept; through its partnership with the University of Leon, and local and regional organizations, the organization plans to promote research, learning, and public policy solutions. Initial events and awareness-raising activities were well attended. The institute was to have broad participation from the University of Leon faculty, public officials, and civic leaders. Site selection was to be on the campus. It is unclear if local support continues to be strong.

Led by Omar, the DLC reviews new and current cases weekly. Referrals are made to other POLUS services. Micro finance support to beneficiaries is determined and managed by this group. It is not clear to what degree referrals are also made to other organizations and services. Cases do not appear to have definitive treatment plans or exit criteria, and actions do not seem to happen in a timely manner. For instance, a staff member suggested that a ramp was needed at a school where a student with disability was placed. However, but months later the ramp was still not completed. Furthermore, when a certain action—such as a better chair or a seating adjustment—is recommended, a home visit should take place within a few months of that recommendation. The DLC does have successes that can be readily documented and represent a holistic treatment plan. The DLC is in a good position to refer people to and support local DPOs or to provide leadership and a venue to disability support groups.

The Reinsertion Program, led by Olmar, as part of the Disability Leadership Institute, advocates for the mainstreaming of children and adults into all levels of education. The team saw and heard some excellent success stories. What seemed to be missing were any particular treatment plans or a defined way to exit the program. The team suggests that any DLI action should be time-limited and related to the clients needs. For instance, any necessary ramps should be built at a school within a few months of a student with a disability entering that school. And, home visits that recommend certain actions, such as a better chair or seating adjustments, should take place within a few months of the original recommendation. When accomplished, these are successes that can be readily documented and progress can be made toward achieving a holistic treatment plan.

Re-integration

There are twenty-one recipients of school re-integration: fifteen in Leon, three in Honduras, and three in Guatemala. Carmen is a grade school student receiving support for transportation, school supplies, and tuition. She has spina bifida and uses a donated wheelchair that appears to suit her needs. She is well integrated into her classroom. The computer class is not accessible; therefore, two people are needed to carry Carmen up the steps to the class.

Economic Opportunities/Social Inclusion

Microfinance is a difficult area and while Polus has made many and varied inroads into this area, in the end it is hard to tell what ventures are successful and how that is defined. Having made a loan or grant, there appears to be very little business at work, and at heart, these seem to be charitable grants. The local loan percentage rate is 17 percent, but for Polus borrowers, its 1 percent. Even at that, the return rate is estimated at 70 percent, considered to be a very low repayment. It is understandable how POLUS got into this business. It is understandable that the

people who have gotten these grants needed them, but experience in this area makes us believe that it is not the best use of funds. There is little transparency; start and end dates and amounts given or amounts repaid are not readily available. The point seems to be that the loan/grant was given and not that it has improved

Supported employment

There are 60 to 65 recipients of supported employment efforts. Funds have been used to assist employers in improving accessibility, tooling, and transport costs.

Micro Grants

There are 25 recipients of micro grants of 1000.00 each. A joint bank account is established in the name of the recipient and Polus. Two signatures are required for all purchases. Large purchases must have Polus approval and a representative present at the moment of purchase. Three small shops were visited. Two shop owners were using donated wheelchairs. Paula was using a wheelchair provided by PLUSAA. It is unclear how it is decided whether to provide a grant or a loan. For loans, the repayment requirements are unclear. It was explained that micro loan recipients are not told that the moneys they re-pay will in the end be re-deposited for them after payment. Repayment rate is at 70 percent.

There are few records available to explain the methods of operation, particularly regarding micro loans. The reports which were provided in the course of the project are inconsistent and outcomes are overly personal and vague. Some type of logical framework would be helpful in monitoring.

Paula

In a visit to the rural home and shop of 43 year old Paula (Paulita) she was using a Torbellino wheelchair provided by PLUSAA. This is Paula's first wheelchair. Prior to receiving this wheelchair she was confined to the house most of her days. Through a micro grant she started a shop from her rural home. This was described as a "demonstration" project. Paula's life was obviously transformed with the provision of a wheelchair and the financial support for her shop. She is now spending time outside, around the neighborhood and as a shopkeeper, is a known and appreciated member of her community. The threshold into the shop / home is very high, requiring two people to move Paula through the front door. A simple ramp would make it possible with one assistant. Paula appears to have a limitation in her right hip causing her knee to rest against the armrest and her foot to be suspended off the front of the seat. The armrests, while being remove-able to aid in transfers, are of a standard height and don't appear to suite her individual support needs. The chair may have been provided before Enrique had attended wheelchair provision training. Santiago commented that at this point her postural support needs could be re-evaluated. Considering that Paula is often visited and represents the individualized service promoted by PLUSAA, re-evaluation and custom service is a good idea. By way of exploration a Prosthetist / Orthotist from Walking Unidos could participate in the re-assessment and fitting of final solution.

Sewing workshop

Three hearing impaired students are supported in attending special classes (not integrated) and are learning sewing skills at a sheltered workshop.

Nursery

Guiermo leads a team starting a nursery called Fuente de Vida or “Fountain of Life”. The team includes one person with Polio, three with hearing impairment, and one upper extremity amputee. The nursery will produce saplings, medicinal herbs, and vegetables. There is a 7 month cycle to market for the saplings and shorter for the vegetables. They have an agreement for purchase of saplings by the local water company. The Nursery appears to have started set up recently. It received a grant of 1975.00 usd.

Chicken raising

A strong individual among the projects visited was a recipient of micro loans and below knee amputee, Edwin Olivares. He has demonstrated leadership ability and is politically involved in the local community. The chicken and egg raising enterprise appears to have started very recently. The first batch of approximately 40 chicks are now in place. There is a clear local market for the chickens and eggs. Edwin would be a strong leader in a grassroots disability advocacy group.

Ben Linder Café

Coffee roasting and brewing starts with coffee beans from “Deans Beans”, a local, not for profit grower. The beans are roasted in house by an person with a disability on an as needed basis. He was trained by the donor of the roasting machine. (this operation is estimated by staff to be 85-90 percent sustainable). Food and beverage service is run by Doris who is the overall manager of the café, estimated by staff to be 70-80 percent sustainable). Massage services are performed by two therapists who are blind. An assistant is present when the therapist is working. They are both employed by the café part time (estimated to be 70 percent sustainable).

Internet café employs one full time staff. It seems that being close to self sustained in all areas of the café, it should be possible to outline the steps to full sustainability. Rather than paying a salary to the massage therapists, they could be given business advice and support along with free space to run a financially independent service from the café. Still, the expectation was that all these businesses, including the internet café, were nearly profitable. No documentation was reviewed to determine their actual viability.

Clam farm

A local group of families received a micro grant to start up a clam farm. A new motor boat allows the families to travel to nearby coastal towns to purchase clams, wood for walkways and tree starters to create the swamp environment needed for raising clams. As the cycle to first harvest is a long way off, it is assumed that the families have another source of income to sustain them for this time.

CONTACTS

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Silvia Illescas- lawyer

PLUSAA Wheelchair workshop
Matilde Villaboa – wokshop manager
Roger Mayorga – Overall supervisor, Production Assistant
Lomar Varelo – Lawyer, follow up
Emmanuel Alonzo – teacher
Enrique Midence Calderon – Wheelchair seating, PT

Ben Linder Café
Doris manager

CAPIDICE- P&O workshop Managua
Mario Rodriguez – Ortho Prosthesis (CIR)

Choluteca P&O workshop
Rayne – workshop manager (on vacation)
Walter (U Don Bosco Cat III candidate
Rocco- Prosthetist (CIR)
Ms. Memary Hernandez – follow up
David – assistant wheelchair technician

Disability Leadership Institute
Omar- lawyer

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Walking Unidos workshop
Marvin Moreira– workshop manager
Reymundo Lopez – technician
Sida (Cat II candidate in Walking Unidos Leon)

Site Visits:

Ben Linder café

Internet café

Coffee Grinder

Massage Therapy

Emanydsa Project – sewing skills for 3 students who are hearing impaired

Polita small store project

Fishing Cooperative/Poneloya

Villa Nueva – Edwing Olivares – Agriculos del Huevos del Oro – chickens

Guillermo Paiz - Fuente de Vida – nursery

Eddy – secondary school scholarship for computers

Choluteca Santos- home store and wheelchair

Children integrated into regular classroom